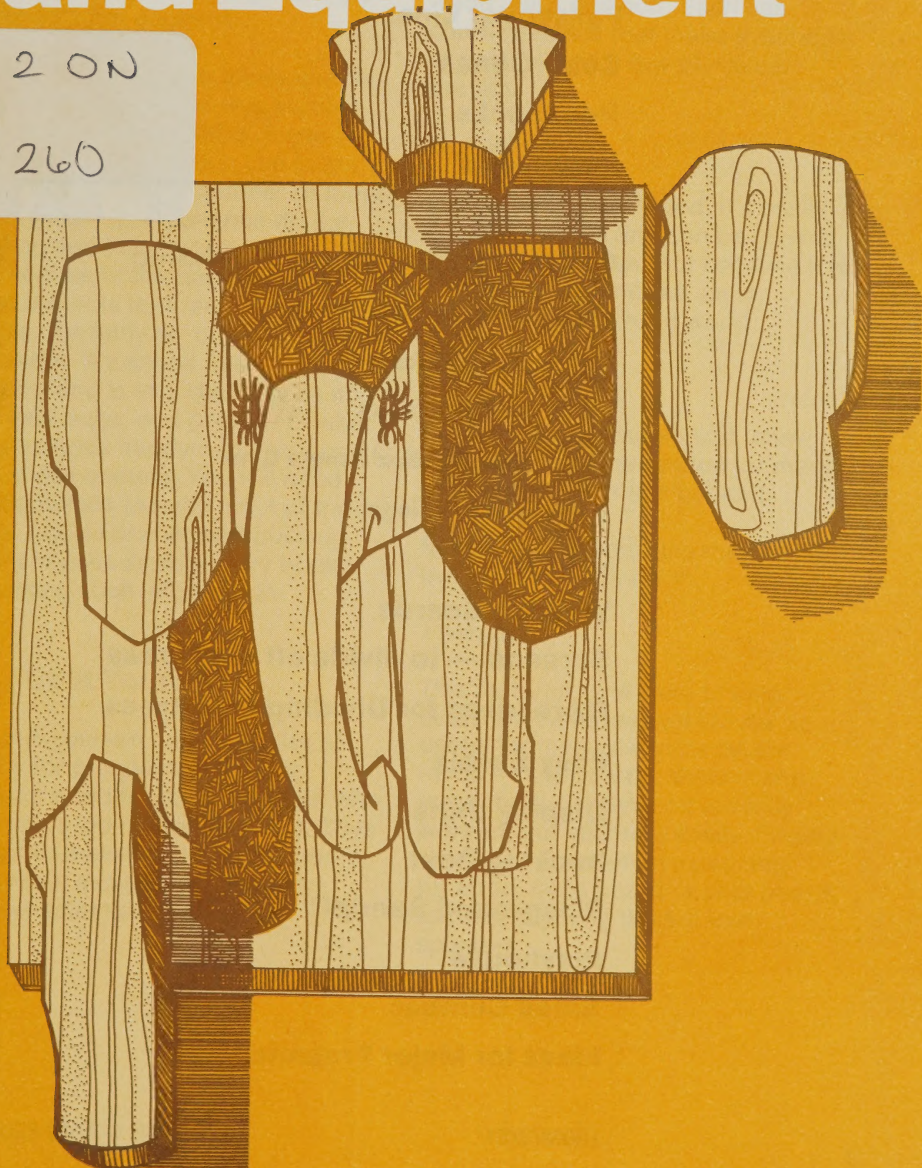


DAYCARE

Handmade Toys and Equipment

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Introduction

Toys to delight the day nursery child can be made inexpensively with basic hand tools and low cost materials. The projects described in this booklet were chosen for their simplicity and for their high rating on any child's fun quotient.

Most of this booklet outlines simple toys and projects that require only basic woodworking skills. If one or two tasks are too tricky, you might think of enlisting a volunteer or hiring a handyman. You can then do the sanding and finishing yourself. The final section of the booklet shows some projects that require the talents of a fairly accomplished do-it-yourselfer. It's called *Ideas for Major Projects* and is included only as an idea exchange, or a preview of what the ambitious handyman could make for the day nursery. You will need detailed plans to build most of these items. Local libraries and building supply houses usually carry books containing such information.

Why Do It Yourself?

Doing-it-yourself can save a lot of money for private day nursery operators and for parent groups who operate co-op nursery schools. Toys are fun to make, and give the home handyman a chance to exercise creative talents.

Materials

Some words about wood . . .

There are two main categories of wood, hard and soft. Each has characteristics that make it suitable or unsuitable for any particular project.

Soft Woods

Pine — a popular wood. It's easily cut and sanded and can be given a smooth safe finish. But because it is soft, it won't stand the same punishment as a hard wood.

Hard Woods

Birch — close grained and 'chew resistant'. Recommended for many of the projects in this booklet.

Maple — more durable than birch, but harder to work with.

Plywood

This material, or a flake or chip board with a hardwood veneer, is useful for many day care centre items — cupboards, shelves and larger toys. Fir plywood is easily worked, but splinters easily. Edging should be used when using any plywood, flake board or chip board, to protect young fingers from splinters.

Quality

Avoid low grade lumber — such as pallet grade. It's very rough and will warp and twist. Spruce is inexpensive, but is unsuitable for most projects because it splits and splinters. The best lumber is 'kiln-dried'. Many manufacturers of wood products such as furniture use top quality hardwood and might be willing to supply 'toy-size' scraps at low cost, or for free.

A Few Notes

It is important to round all sharp corners and edges. All surfaces must be smooth before objects are finished.

Lumber sizes can be confusing. For instance the 'two by four' hasn't been 2" × 4" for years. It's really about 1½" × 3½". Boards of ½" and ¾" are standard sizes but the move to metric could mean a change.

Don't be afraid to vary the dimensions if the materials at hand aren't the exact size shown in the plan.

Use this booklet for basic ideas and expand on them to produce some unique toys.

Finishes and Glue

Finishes *must* be non-toxic. There are a variety of plastic-based finishes on the market — both clear and colored — which are safe for children's toys. Lead-based paints must never be used — they're poisonous!

White resin glue can be used in assembling many wood projects. It sets quickly, is non-toxic and any excess can be easily wiped off with a wet cloth. For a stronger joint, glue plus nails or screws can be used.

You can get specific advice from your local lumber or paint dealer on wood and finishes.

Good luck.

Interlocking Train or Boat

Materials:

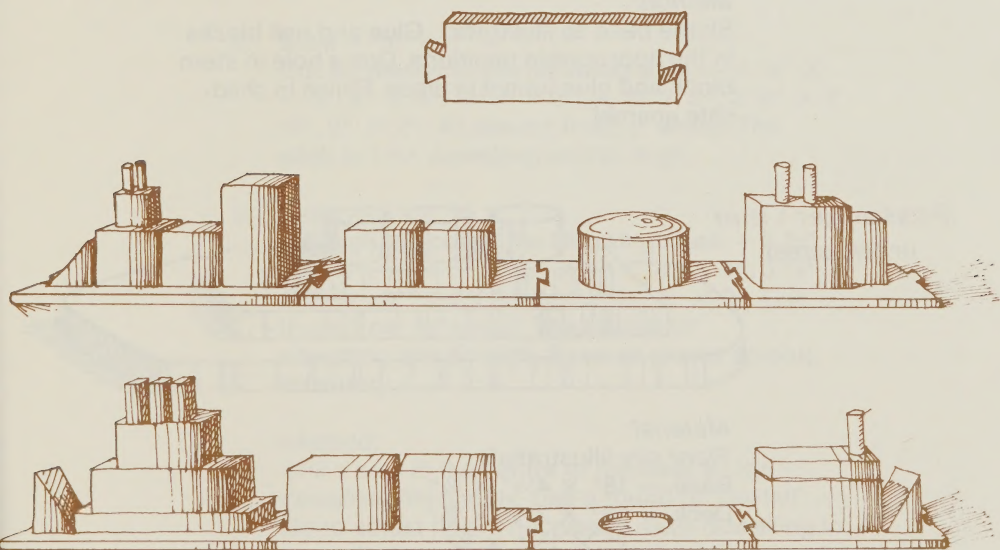
Birch base — 8" × 2" × ¾".

Blocks could be pine.

Method:

Cut as shown.

A child can use this basic form to make either a train or boat by varying the the additions such as pegs, birch dowelling, blocks, etc. Sand all surfaces and finish as desired.



Freighter



Material:

Base — $16'' \times 4\frac{1}{2}'' \times \frac{3}{4}''$

Two blocks for bow — $4'' \times 1\frac{3}{4}'' \times 1\frac{3}{4}''$

$3'' \times 1'' \times \frac{3}{4}''$

Stern block — $4'' \times 2'' \times 1\frac{3}{4}''$

Dowel for funnel.

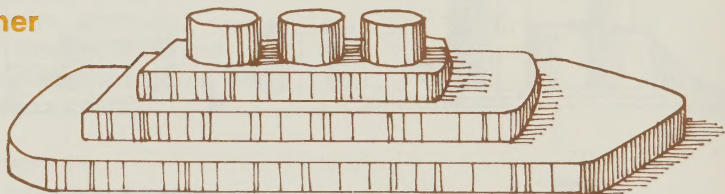
Use birch or pine and sand all pieces well to remove sharp corners. For a table-size freighter — $6''$ long — reduce all dimensions proportionally.

Method:

Shape base as illustrated. Glue and nail blocks in the appropriate positions. Drill a hole in stern block and glue funnel in place. Finish in child-safe enamel.

Passenger Liner

(in two sizes)



Material:

Floor size (illustrated)

Base — $18'' \times 4\frac{1}{2}'' \times \frac{3}{4}''$

Deck — $13'' \times 3\frac{1}{4}'' \times \frac{3}{4}''$

$7'' \times 1\frac{3}{4}'' \times \frac{3}{4}''$

Funnels — three — $1''$ rounds

Table size

Base — $6'' \times 2'' \times \frac{1}{2}''$

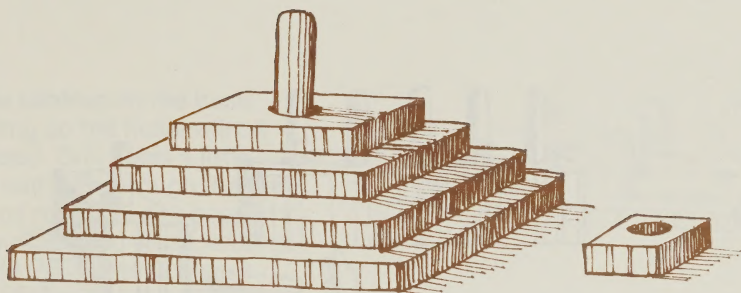
Deck — $4'' \times 1\frac{1}{2}'' \times \frac{1}{2}''$ (one only)

Funnels — one or two — $\frac{1}{2}''$ dowelling

Use birch or pine and sand smooth for safety.

Method:

Shape pieces as illustrated. Glue and nail base and decks together. Drill holes for funnels and glue them in place. Finish as desired.



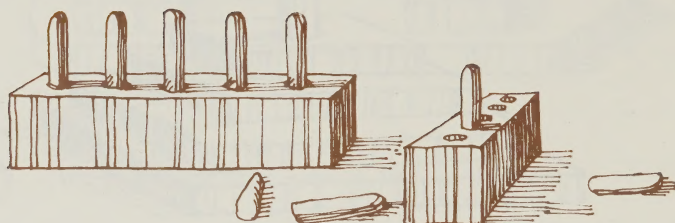
Material:

1. Base — $7'' \times 7'' \times 1''$
Cut five pieces to the following sizes — $6'' \times 6''$, $5'' \times 5''$, $4'' \times 4''$, $3'' \times 3''$, $2'' \times 2''$ — cut all of them from $1\frac{3}{4}''$ wood. The stick is $\frac{3}{4}''$ dowelling and $7''$ high.
2. Base — $5'' \times 5'' \times 1''$
Cut six pieces to the following sizes — $4\frac{1}{2}'' \times 4\frac{1}{2}''$, $4'' \times 4''$, $3\frac{1}{2}'' \times 3\frac{1}{2}''$, $3'' \times 3''$, $2\frac{1}{2}'' \times 2\frac{1}{2}''$, $2'' \times 2''$. All are cut from $1''$ wood. The stick is $1\frac{3}{4}''$ dowelling and $8''$ high.
3. Base — $6'' \times 6'' \times 1''$
Cut eight pieces to the following sizes — $5\frac{1}{2}'' \times 5\frac{1}{2}''$, $5'' \times 5''$, $4\frac{1}{2}'' \times 4\frac{1}{2}''$, $4'' \times 4''$, $3\frac{1}{2}'' \times 3\frac{1}{2}''$, $3'' \times 3''$, $2\frac{1}{2}'' \times 2\frac{1}{2}''$, $2'' \times 2''$. Cut these from $\frac{1}{2}''$ wood. The stick is $\frac{1}{2}''$ dowelling and $6''$ high. Sand all pieces smooth for safety.

Method:

Drill a hole in the centre of the base so the dowelling fits snugly. Use a round or 'rat-tail' file to adjust hole if necessary. Glue dowelling in place. Drill a hole in the centre of each piece of the cone at least $\frac{1}{4}''$ larger than the diameter of the dowelling. Sand and finish each piece in a different color using child-safe enamel.

Peg Blocks



Material:

6 blocks — $5\frac{1}{2}'' \times 1\frac{1}{2}'' \times 1\frac{1}{2}''$

30 pegs, 5 for each block — $\frac{3}{8}''$ dowelling cut $3\frac{1}{2}''$ long.

Method:

Sand the corners of the blocks round. Drill holes in the blocks slightly larger than the pegs and to a depth of $\frac{3}{4}''$. Enlarge the holes slightly with a round file if pegs fit too tightly. Sand all surfaces. Finish in red, green and blue — two blocks and 10 pegs in each color.

Pegboards

Rectangular Design

Material:

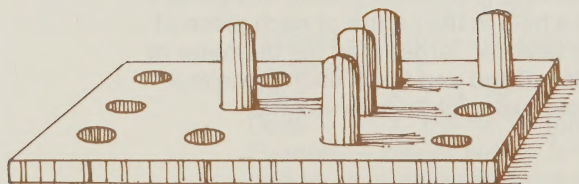
1. Base — $13'' \times 6'' \times 1''$

12 pegs — $1''$ birch
dowelling cut into
4" lengths

2. Base — $10'' \times 10'' \times 1''$

36 pegs — $\frac{1}{2}''$ birch
dowelling cut into 3"
lengths.

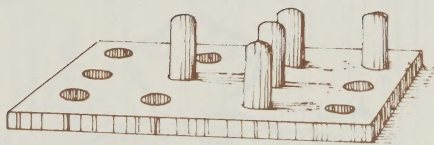
Use birch or birch
plywood with edging for
base.



Pegboards

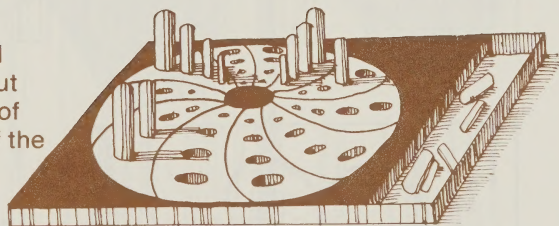
Method:

Locate hole centres on the base before drilling so the holes will be evenly spaced. Drill holes a little more than half way through the base. File peg tops round and fit pegs in holes. If holes are too small, enlarge with a round file. Sand all pieces. Use a clear finish on the base. Enamel two pegs each with the following colors: red, orange, yellow, green, blue and purple.



Circular Design

Paint the pattern on the base and drill the holes as shown above. Cut the pegs from various diameters of dowelling. Graduate the height of the pegs, having the shortest in the centre.



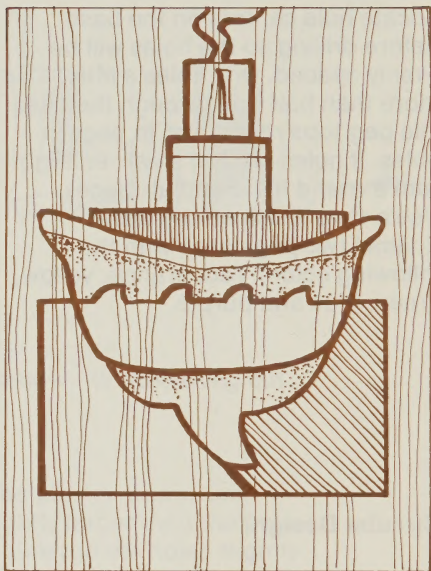
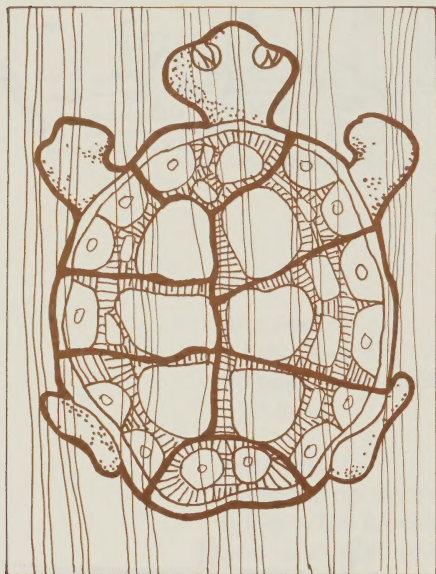
Attach a box to the pegboard to hold the pegs.

Star Design

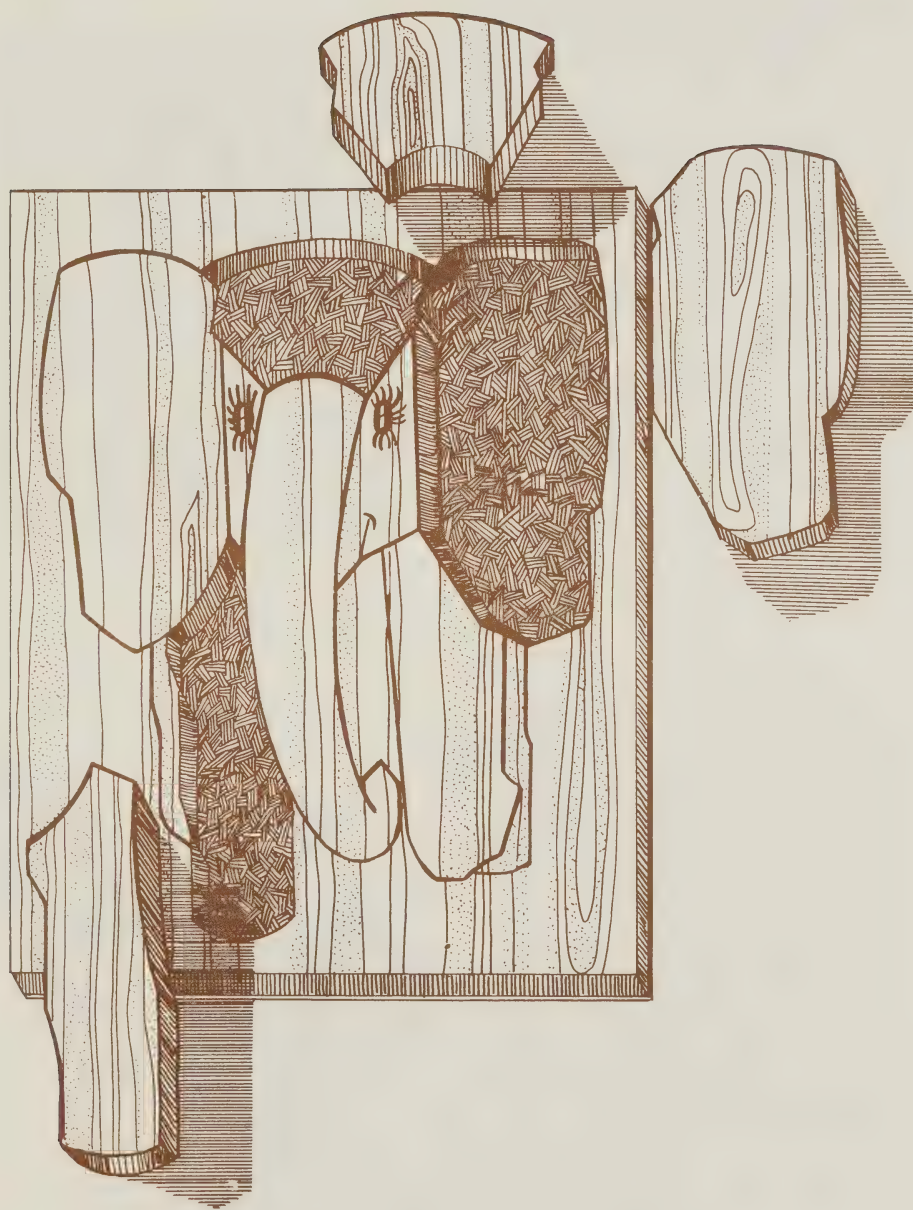
Paint the pattern on the board. Drill the holes as shown above. The pegs could be painted to match the color of the design.



Inlay Puzzles



Making a puzzle is really no mystery. Pick one of these patterns or exercise your talents and create one of your own. Draw the design on a 12" × 9" piece of tempered masonite. Cut out the shapes with a jig saw and glue the remainder of the puzzle onto a wood backing.



Gadgets for the Young Mechanic

Manipulative hardware mounted on a board makes an interesting piece of play equipment for the nursery set.

Fix a small tin to the board to hold pieces of metal that can be used with a magnet. Make sure the edges of the can are smooth.

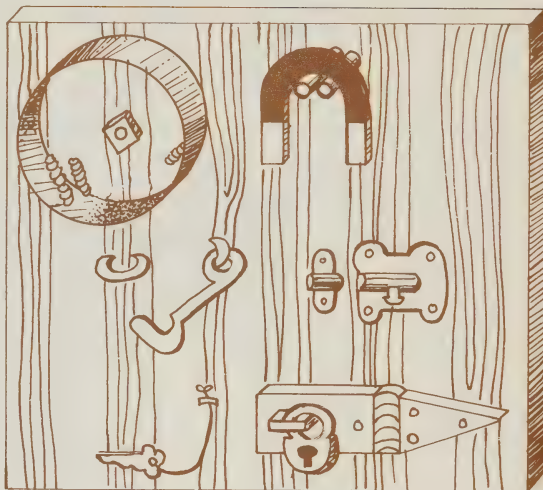
Material:

Hook and eye

Bolt

Key for padlock fastened to board with string.

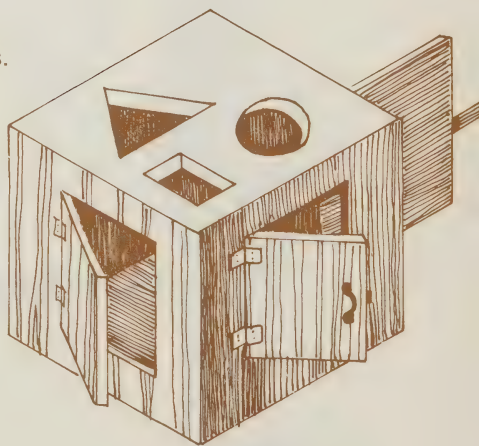
Hasp and padlock



Make a box with doors on each side using different types of locks and hinges. Cut three or four holes of different shapes in the top so that various sized blocks can be posted in it and removed through the doors.

Material:

Use birch plywood, or flake or chip board with birch veneer top and bottom. It should be $\frac{1}{2}$ " thick at minimum. Mitre corners at 45 degree angle. Use edging on top and bottom to prevent splinters.



Unit Blocks

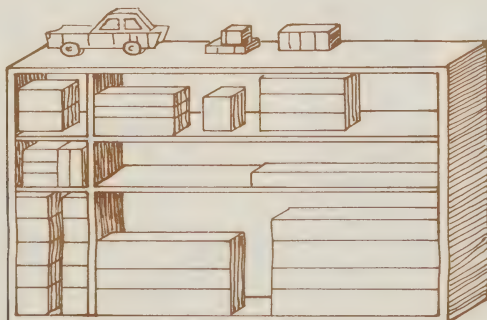
There are many different types of blocks available for use in nursery schools. The most rewarding ones are unit blocks. These are made of plain, unpainted, accurately cut and smoothly sanded wood. They can be given a clear finish but should never be painted because this destroys part of their creative function. A foundation set would number about 200 pieces consisting of multiples of the basic block size, cylinders, pillars, triangles, ramps and curves based on the same measurement. Be sure to cut these blocks accurately, because there is great frustration when pieces do not fit together properly.

In planning the nursery, set aside an area for block play. Blocks should be stored according to size on shelves in the middle of a wall. This arrangement provides free access to the blocks, and helps children to choose the appropriate size for a project.

Accessories are welcome additions to the block centre. Small cars, trucks, airplanes, boats, trains, traffic signals and road signs, add

another dimension to the children's play. Colored cubes are desirable, too, and can be used in many different ways. Small sheets of plywood or hardboard help in building roofs or floors and allow the children to create two and three storey structures.

Building with blocks is mentally stimulating and an important aspect of creative play. A child playing alone is working out ideas, and playing with other youngsters will strengthen social skills. Language is reinforced and vocabularies grow, as children plan together about their service station or airport. An understanding of mathematics begins when the child learns to recognize that a unit block is twice the size of a half unit block. Concepts of size develop — large, small, high, wide, etc. A sense of design or form evolves as children arrange different sized blocks in interesting patterns. Small muscle coordination increases as the child carefully places one block on another, creating a miniature city hall. There is also the sheer joy of manipulation that the child experiences in handling blocks of varying proportions.



Storage of Blocks

Unit Blocks — Suggested Number and Size of Blocks in Nursery Set



20 ($2\frac{3}{4}'' \times 2\frac{3}{4}''$
 $\times 1\frac{3}{8}''$ thick)



60 ($2\frac{3}{4}'' \times 5\frac{1}{2}''$
 $\times 1\frac{3}{8}''$ thick)



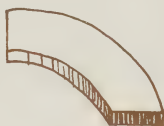
60 ($2\frac{3}{4}'' \times 11''$
 $\times 1\frac{3}{8}''$ thick)



20 ($2\frac{3}{4}'' \times 22''$
 $\times 1\frac{3}{8}''$ thick)



8 Circular Curves
($2\frac{3}{4}'' \times 8'' \times 1\frac{3}{8}''$)



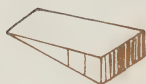
4 Elliptical Curves
($2\frac{3}{4}'' \times 13\frac{1}{2}''$
 $\times 1\frac{3}{8}''$)



4 Gothic Doors
($2\frac{3}{4}'' \times 5\frac{1}{2}''$
 $\times 1\frac{3}{8}''$)



4 Small Half Circles
($2\frac{3}{4}'' \times 1\frac{3}{8}''$)



12 Ramps
($2\frac{3}{4}'' \times 5\frac{1}{2}''$
 $\times 1\frac{3}{8}''$)



4 ($2\frac{3}{4}'' \times 2\frac{3}{4}''$
 $\times 1\frac{3}{8}''$)



4 ($2\frac{3}{4}'' \times 3\frac{1}{2}''$
 $\times 1\frac{3}{8}''$)



4 Large Buttresses
($2\frac{3}{4}'' \times 5\frac{1}{2}'' \times 1\frac{3}{8}''$)



8 ($2\frac{3}{4}''$ diam.
 $\times 5\frac{1}{2}''$ long)



2 Right Angle Switches
($5\frac{1}{2}'' \times 8'' \times 1\frac{3}{8}''$)



2 'Y' Switches
($8\frac{1}{2}'' \times 11'' \times 1\frac{3}{8}''$)

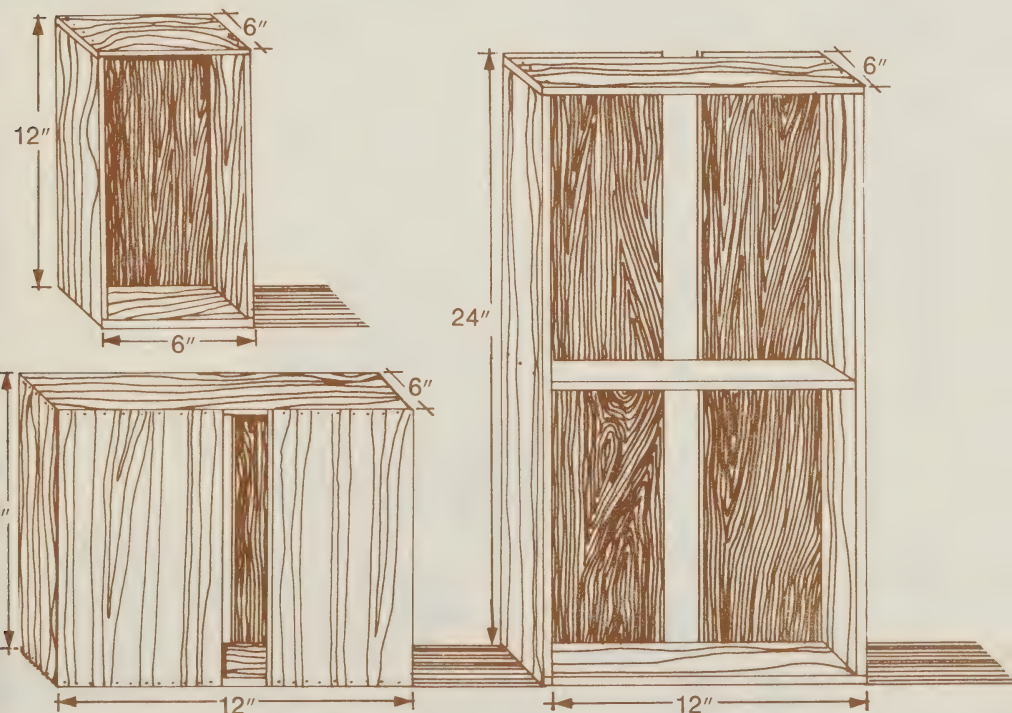
Hollow Blocks

These are large blocks for outdoor play or a spacious indoor block centre. The blocks should be painted as a protection against the weather. Although they are large, these blocks can be handled by children without causing strain. Imaginative play can be encouraged by the provision of useful extra shapes. A fort built with hollow bricks becomes more fun with a drawbridge; a garage with a roof is great; and it is really exciting to make your own walking board. Five or six planks, sanded and painted, $1\frac{1}{2}'' \times 8'' \times 36''$, can be used in these ways, and will increase the children's enjoyment enormously.

Two small sawhorses, and a car steering wheel mounted on a box also provide unlimited opportunities for lively, creative play.

A well equipped block area should have 12 to 15 hollow blocks of each size. It is possible to begin with fewer than the suggested amount and add to the supply as funds are available.

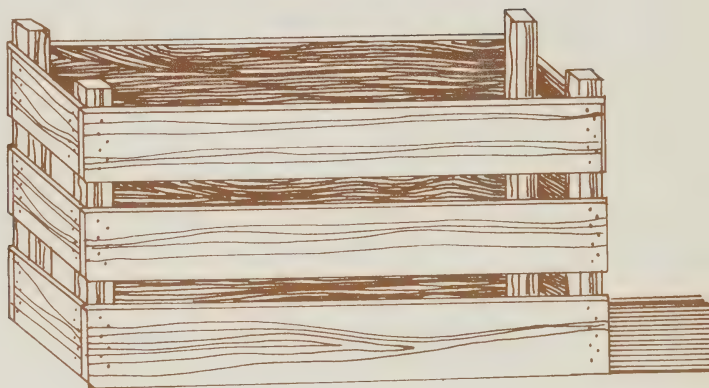
Material: — $\frac{3}{4}''$ pine



Packing Box Jungle Gym

Approximately size 36" × 24" × 24".

Make these boxes so they can be stacked one on top of the other.



Creative Cartons

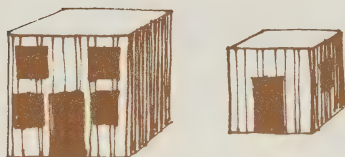
Substitute blocks can be made from sturdy cardboard boxes. Tape and glue the boxes together, then have a group box painting session with the children. These cartons are not as durable as the hollow blocks, but are fun to make, and the children will feel a real sense of achievement.





Block Village

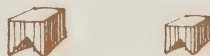
Material:
 Houses — Birch
 9 — 2" cubes
 12 — 1" cubes
 6 blocks, 2" × 2" × 1"



12 roofs — 6 - 2" cubes cut diagonally



15 chimneys — 1" cubes cut as shown



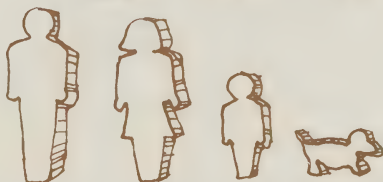
Fence — 20 pieces, 3" × 1/2" × 1/4"



Trees — 10 pieces, cut as shown from 1" pine



Villagers — 6 figures of people
 (minimum 1/2" thick)
 3 dogs — (minimum 1/2" thick)



Paint the blocks bright colors. The houses could be yellow, the roofs red, and the trees green. Black paint could be used to indicate windows and doors.

Drums

How to beat your own . . .

Wooden Bowl Drum

Materials:
Wooden bowl
Rawhide



Directions

1. Drill two finger holes through the bottom of the bowl for holding and improving the tone.
2. Sand and finish if necessary.
3. Cut a piece of rawhide 2" larger than the diameter of the bowl. Rawhide should be soaked 24 hours before handling and *kept damp with a sponge while being worked*.
4. With leather punch make eight holes in the rawhide circle about $\frac{1}{4}$ " from the edge.
5. Cut lacing from a 6" circle of rawhide. The lacing should be $\frac{1}{4}$ " to $\frac{3}{8}$ " wide. Re-soak a few minutes and stretch, making sure there are no weak spots in the lacing.
6. To lace—number the holes from 1 to 8. Tie one end of lacing securely in hole #1, go across to #5, to #2, to #6, to #3, to #7, to #4, to #8. Now tighten the lacing beginning with hole #1. When as tight as possible, thread the lacing in a bodkin and draw the lacing together in the centre by lacing over and under the number of times. Fasten and cut off leaving an end to tie a loop for hanging.

Other Drums

Materials such as large tin cans, coconut shells or gourds, with a hole in them, waste paper baskets or a two gallon paint pail, can be used instead of a wooden bowl.

Drum heads

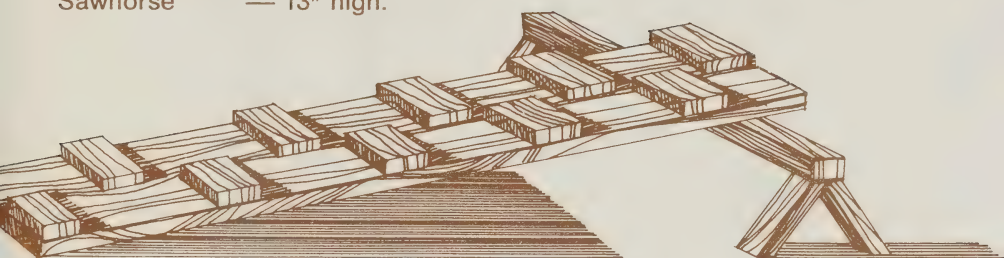
1. Second-hand drum heads are often available from a musical instrument house. These need to be soaked for 30 minutes before using.
2. Rawhide can be purchased from a craft supply house. Rawhide must be soaked for 24 hours and kept damp while being worked.
3. Different kinds of leather produce different sounds. Tooling leather has a nice tone. Dampen with a sponge, leave a few minutes and then stretch it on the drum. Tanned shoe leather is also good but should not be soaked or wet.
4. Linen dish towelling can be used for a drumhead. The dry linen is stretched tight, fastened with tacks and given a coat of shellac. The linen drumhead remains tight and gives a good sound resembling that of rawhide.

Drum Sticks

Dowelling about 8" long. The end of the dowelling can be wrapped in many rubber bands to make a massed rubber tip. A softer drum stick can be made by covering a dish mop with velvet, corduroy, or felt and tying very firmly.

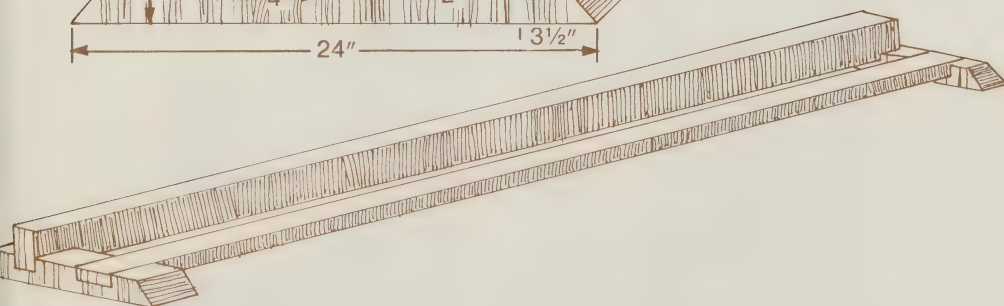
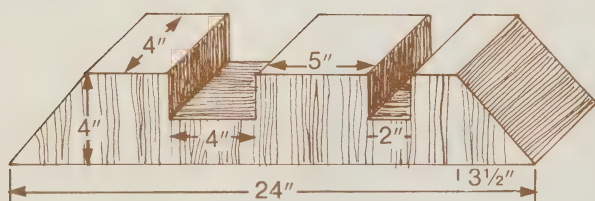
Walking Boards

Material: pine
 Board — 8' × 1' × 1"
 Blocks — 8" × 4" × 2"
 Small Wooden
 Sawhorse — 13" high.



Material: cedar
 2 pieces — 24" × 4" × 4"
 2 pieces — 6' × 4" × 2"

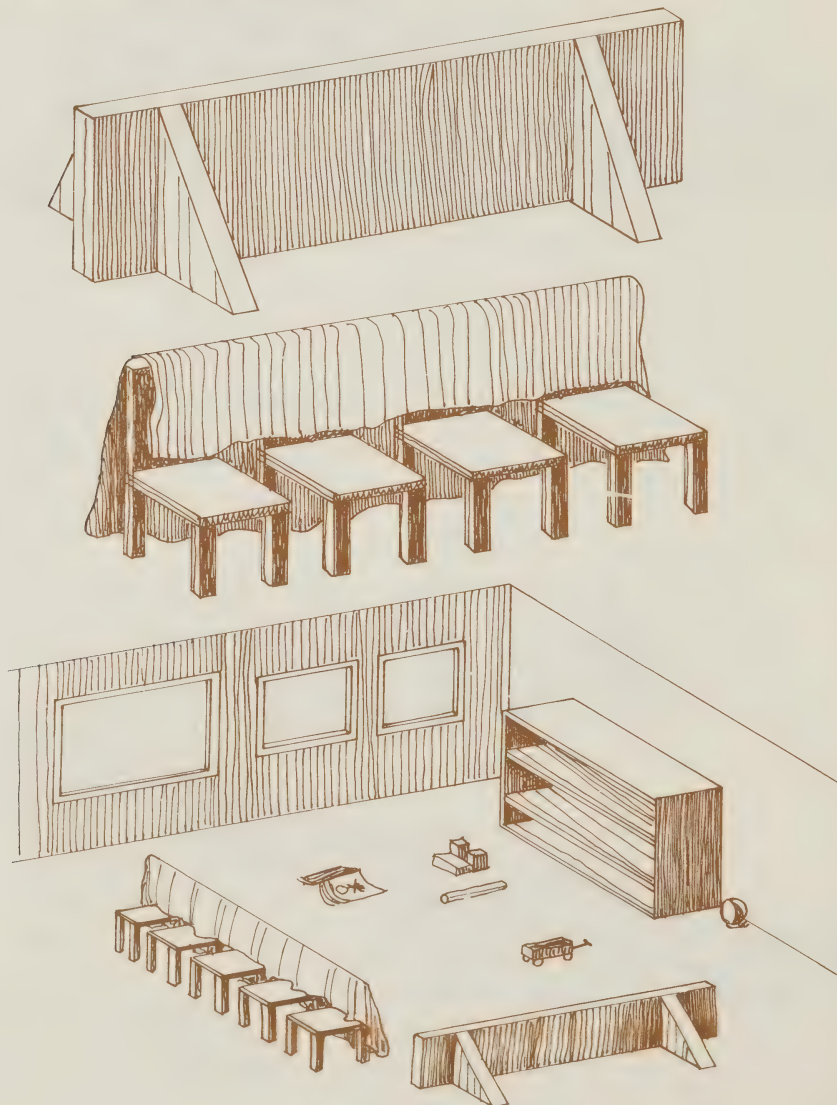
Assemble with nails or screws and glue as illustrated. Sand all surfaces and finish with two coats of clear varnish.



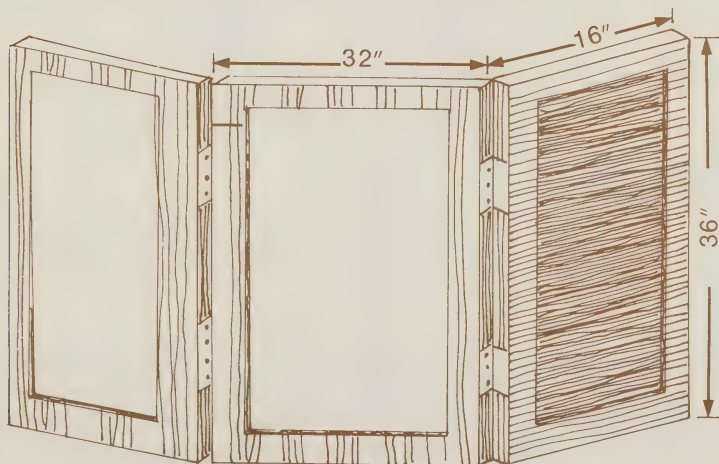
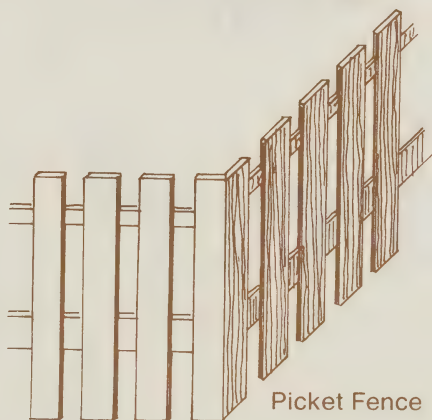
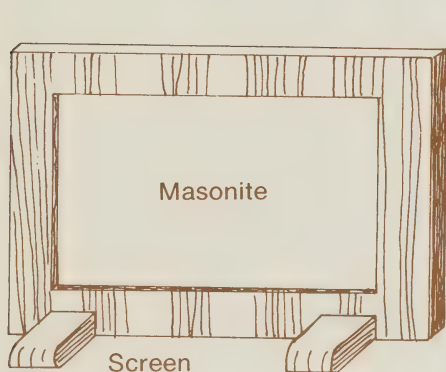
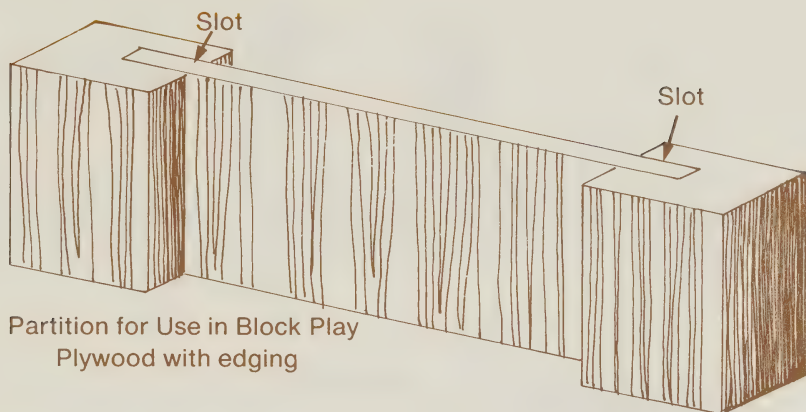
Screens — to divide off play areas

It is often necessary to divide a large hall into small play areas. A divider can be made by hanging material over the backs of a row of chairs. Secure the material with spring clothes pegs.

Here's an easily constructed divider for making block or floor play areas. Cut a 12" plank (pine or plywood with edging) to the desired length. Use four triangular pieces of wood for supports. Screw two on each side as shown.

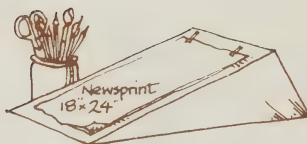
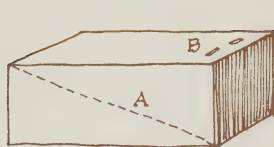


More ideas for dividing play areas

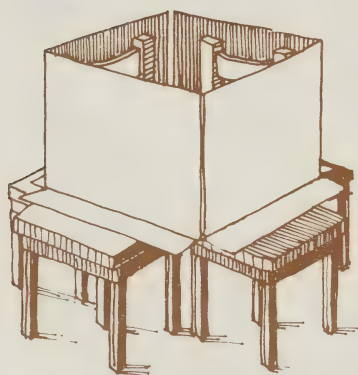


Folding screen (plywood or masonite)

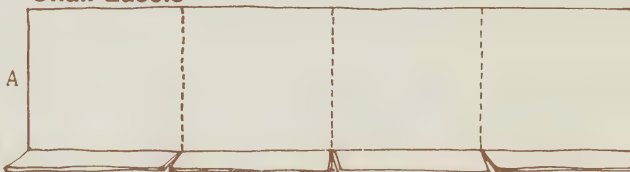
Easy Easels



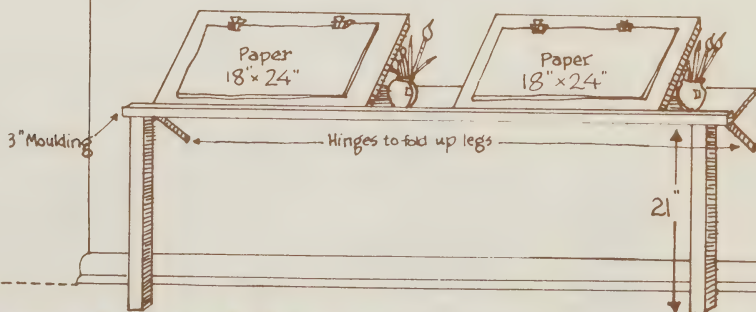
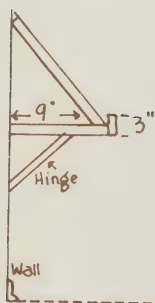
Two easels can be made from one cardboard carton. Cut the carton diagonally as shown in A. Cut two slits in the long side B to fasten paper by means of clothes pegs. The easels can be used side by side, on the table or on the floor.



Chair Easels



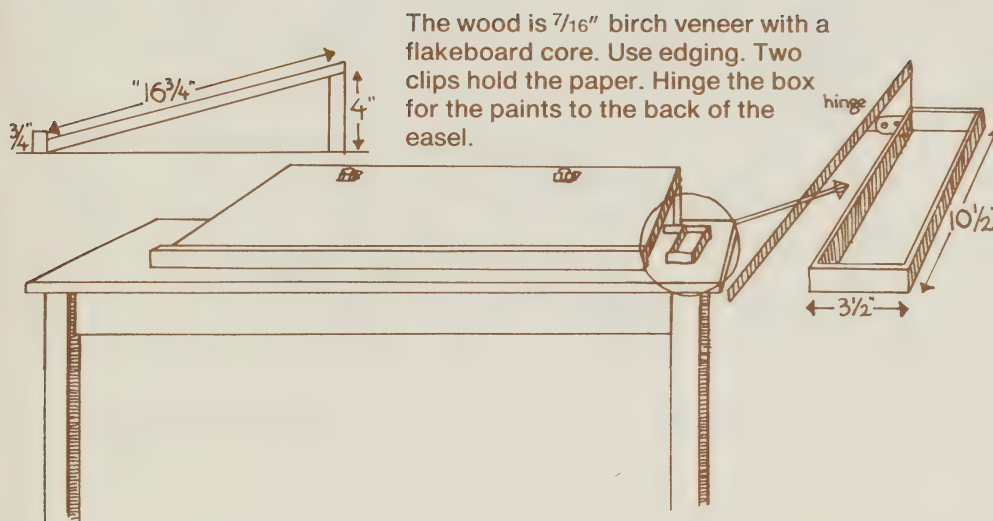
Open out a large cardboard carton as shown. Cut the top flaps off leaving flaps on the bottom for support. Set up four chairs in a square formation and set the cardboard on them. Tie it at the open side. Fasten newsprint on the cardboard with clothes pins or clips. This type of easel can be easily dismantled each day if necessary.



Painting arrangement along wall of playroom

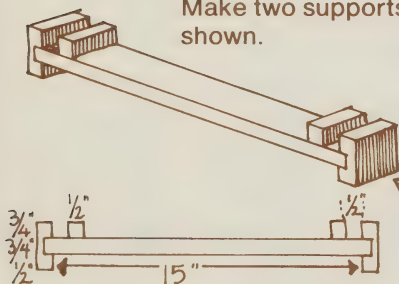
A folding 9" shelf can be put down when not in use. The movable painting boards are made of composition board with a piece of wood fastened at the back into which the angle hooks are screwed. Newsprint is hung on these hooks. At other times these boards could be used on the floor or on tables.

Table Easels



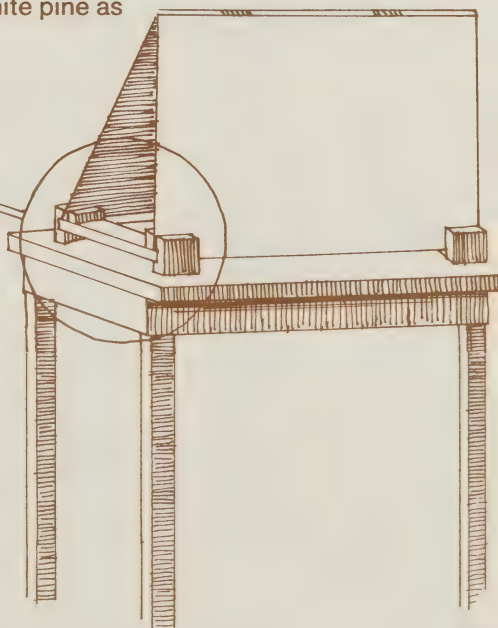
The wood is $\frac{7}{16}$ " birch veneer with a flakeboard core. Use edging. Two clips hold the paper. Hinge the box for the paints to the back of the easel.

Support:
Make two supports of white pine as shown.

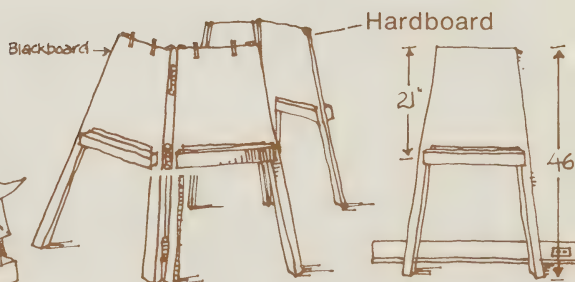
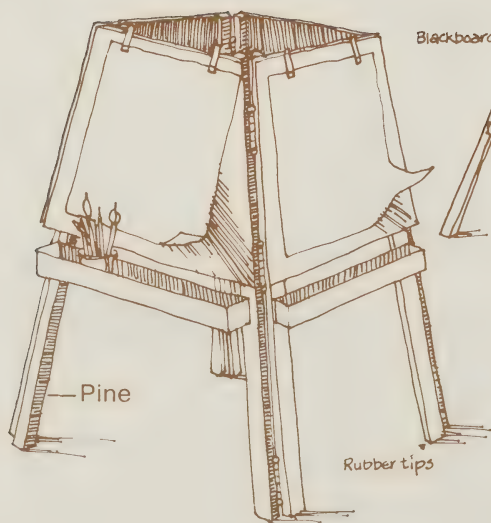
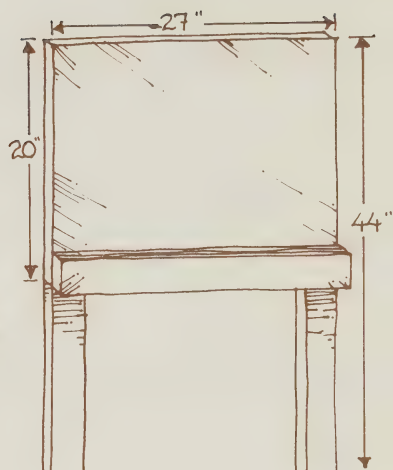
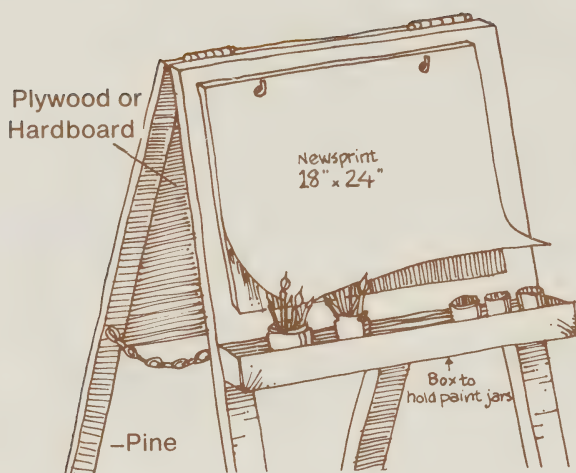


Easel:

You need two pieces of masonite $2'4" \times 2"$ and two hinges.



Double Easel



Four-Sided Easel

Use four chalkboards, each with its own paint or chalk holder. Hinge together two of the sections so that the easels can be used flat against a wall or with all four sections hooked together at opposite corners.

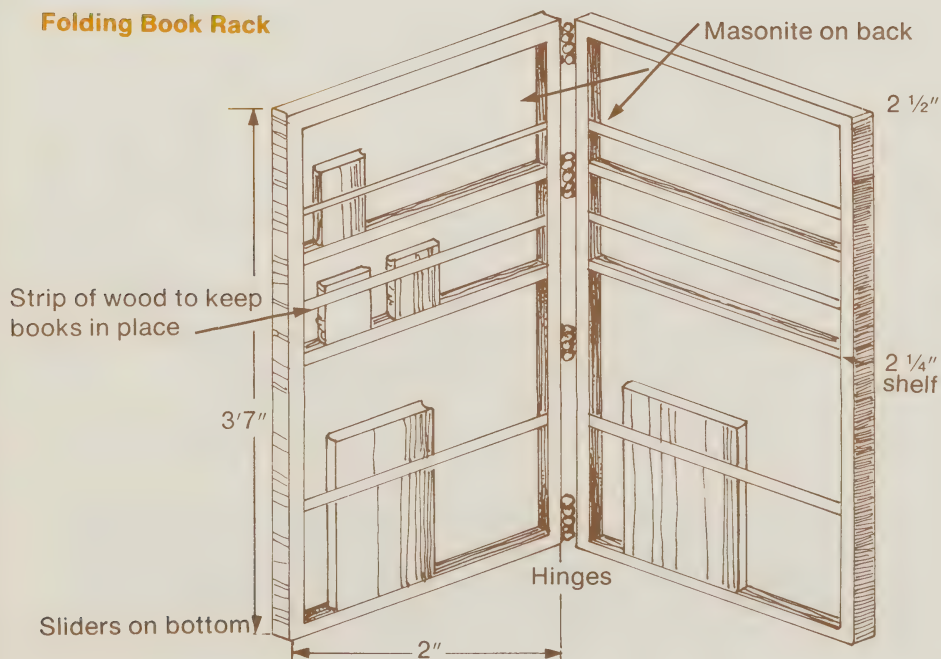
Display Units



Cloth Hanging

Make this display unit of cloth with pockets of various sizes, then hang it on the wall or the back of a toy shelf.

Folding Book Rack



Rocking Boat

In this position it can be used as steps



Materials: Fir plywood can be used if the edges are covered to prevent splintering.

Length 4'

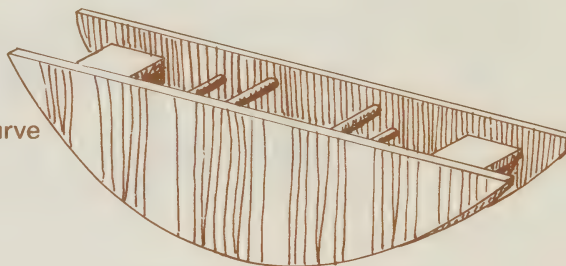
Width 2'

Depth 1'1"

Two curved sides $\frac{3}{4}$ " (shape of curve not important)

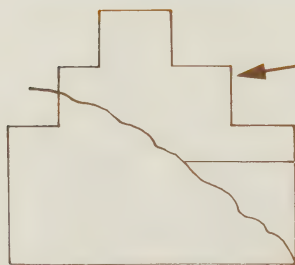
Three pairs of steps

Two poles 1" diameter \times 2'



In this position it can be used as a rocking boat

The Playground Sandpit



Concrete steps form a retaining wall and a bench. Curved wall 2' above sand level provides shelter from wind. Sand at least 18" deep.

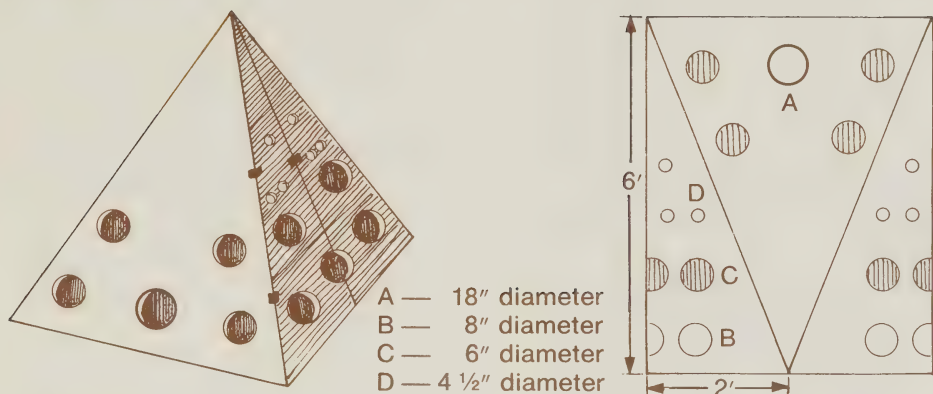
2" layer of $\frac{1}{2}$ " to 1" gauge quarry rejects

4" layer of 2" gauge quarry rejects

12" layer of broken brick

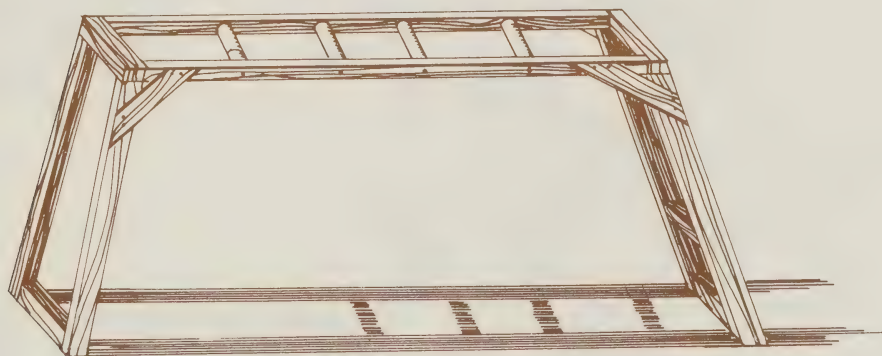
If land drains are used, they must lead to a soakaway or be connected to the drainage system. A wire frame of the largest possible mesh will keep cats from soiling the sand. Build the pit in a sunny section of the playground. It is a good idea to provide for watering since sand isn't much fun to play with when bone dry.

Playhouse



This folding playhouse serves as a climber in an indoor activity playroom. It is made from two sheets of $\frac{1}{2}$ inch plywood 4' \times 6'. Use birch or poplar. Clamp two sheets of plywood together and cut both at once as shown in the cutting diagram. Cut circles of varying sizes according to measurements.

Use loose pin hinges on all joints including the four half panels. Eighteen hinges needed. A sabre saw is recommended. One can be rented if necessary.



Small Climber

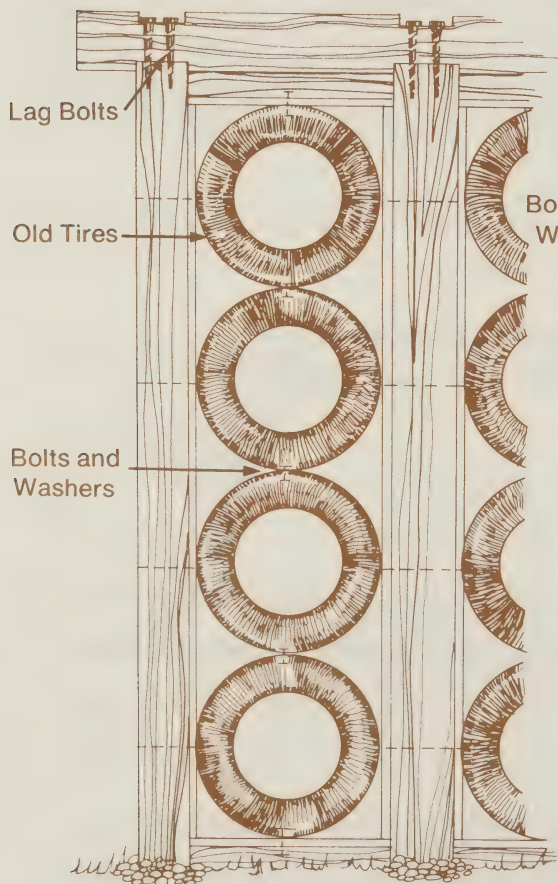
This climber gives the child good hanging and stretching exercise. The step on the right enables a small child to reach for the rungs. The top section can be constructed with a ready made ladder cut to this size and attached to the stand as shown. Use 2" \times 2" hardwood for frame. This can be used indoors for active play.

Tire Climber

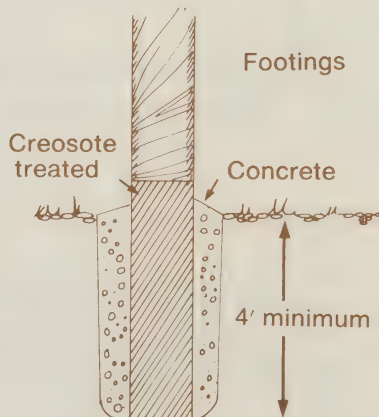
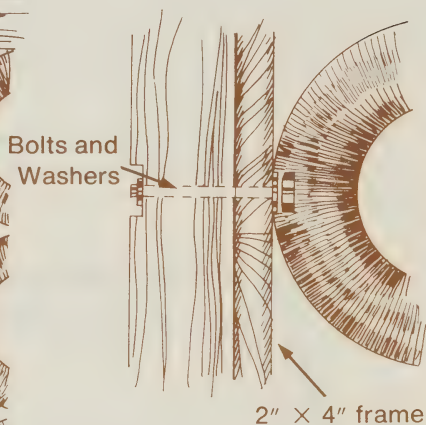
Materials:

Timber poles or cedar posts
(minimum 4" × 4"), of suitable
length.

Treat for weather protection.



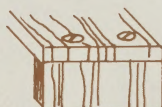
Bolting Detail



More Uses for Tires

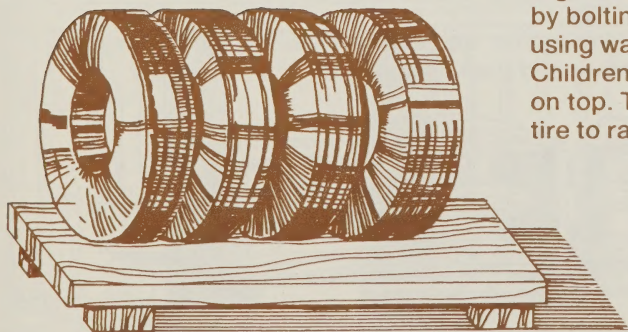
Kids love swings, and tires can be used to add to the fun.

Remove the seat from the chains on existing swings. Hang two tires on the chains and place a plank on the tires. At each end of the plank fasten a piece of wood as shown. The children can now swing together and learn to cooperate with one another.



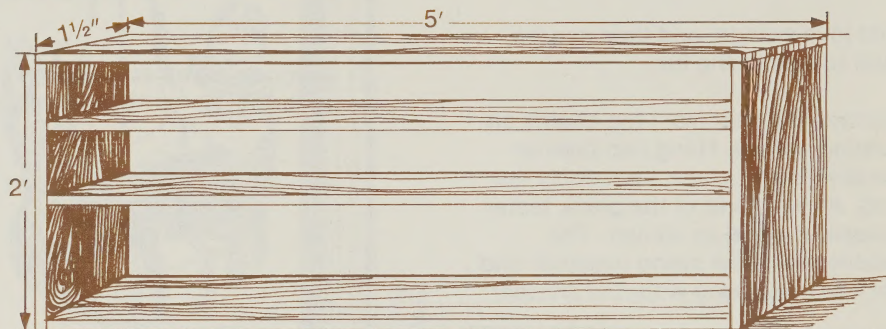
They also love to crawl and climb.

A good crawling space can be made by bolting tires to a small platform, using washers next to the rubber. Children can crawl through or climb on top. The platform can be set on a tire to raise it off the ground.



More Ideas for Major Projects

Toy and Storage Cupboards

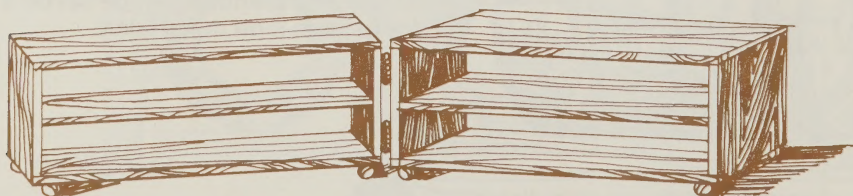


Cupboard with screen front

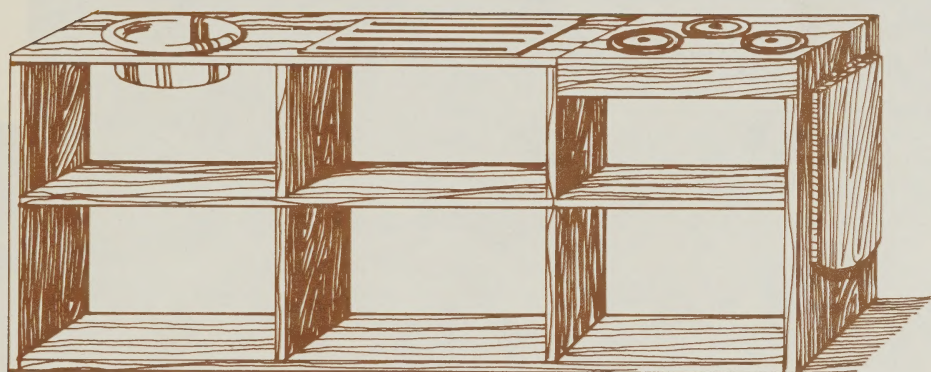
Fronts of cupboards can be used as screens.



Two of the cupboards are hinged together and can be closed when not in use, by wheeling the free ends together and padlocking them.



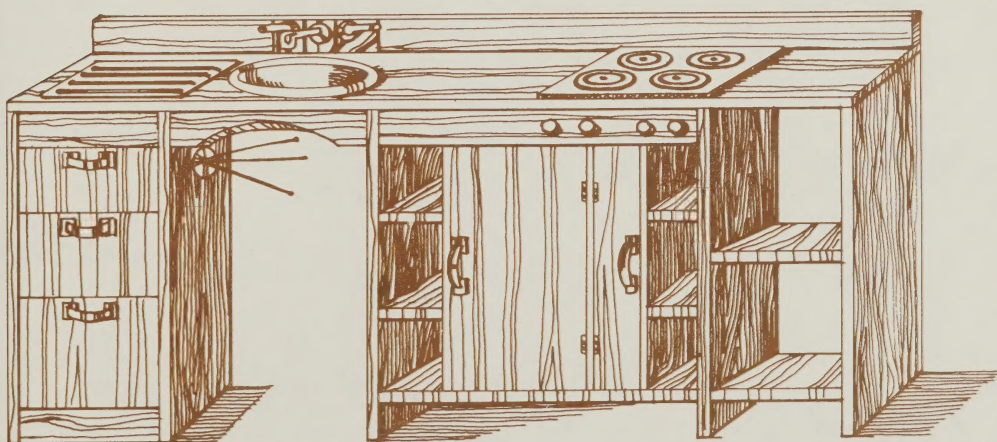
Stove And Sink Cupboard



This can be constructed of plywood with edging as shown.

Stove — Paint dark circles or affix coffee tin lids to represent burners. Attach switches or paint them on front. Door could be put on stove to make oven — use strong hinges.

Sink — Removable plastic dish pan sits in hole in counter top.



Hon. Keith C. Norton
Minister

Robert D. Carman
Deputy Minister



Ministry of
Community and
Social Services

